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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/010,404	12/05/2001	Max K. Mortensen	PI-7248	2691

7982 7590 04/20/2004

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EXAMINER	
PRICE, ELVIS O	

ART UNIT	PAPER NUMBER
1621	

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/010,404	MORTENSEN ET AL.	
	Examiner	Art Unit	
	Elvis O. Price	1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) *7-12* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 13-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 are pending in the application. Claims 7-12 are remain withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention (see finalization of restriction requirement issued on 10/20/2003).

2. Applicants' amendments filed 1/23/04, have overcome the 35 USC 112, second paragraph rejection issued in the office action dated 10/20/2003.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-6 and 13-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Elnager {US Pat. 6,103,926}.

Applicants claim, in brief, a thermal benzylic bromination process for producing a benzyl bromide comprising, contacting gaseous bromine with a reaction mixture having an organic, liquid phase comprising an aromatic ring-containing compound bearing one benzylic carbon atom, sufficient to effect benzylic bromination of said benzylic carbon atom.

Elnager teaches a thermal benzylic bromination process for producing a benzyl bromide comprising, contacting bromine with a reaction mixture having an organic, liquid phase comprising an aromatic ring-containing compound bearing one benzylic carbon atom, to effect benzylic bromination of said benzylic carbon atom, at a

temperature that is between 100^0 C to about 170^0 C (see Col. 3, lines 16-67 through Col. 4, lines 1-18 and Examples 1 and 2). Elnager teaches that the hydrogen halide by-product, which results from the reaction, should be removed from the reaction mixture by washing with water or purging the reaction mixture with an inert gas (see Col. 6, lines 64-67 thorough Col. 7, lines 1-17). Elnager teaches that the molar ratio of the bromine relative to the said aromatic ring-containing compound should not exceed 0.8 and discloses a molar ratio of 0.59 of bromine to the aromatic ring-containing compound (see Col. 6, lines 28-34 and Example 1, respectively). The difference between the presently claimed invention and what is taught by the Elnager reference is that the Elnager reference does not disclose, specifically, a thermal benzylic bromination process in which gaseous bromine is contacted with the said aromatic ring-containing compound and Elnager does not teach aromatic ring-containing compounds such as toluene, p-bromotoluene, p-fluorotoluene or 4-bromo-2-fluorotoluene. However, Elnager generally teaches that to assist in the rapid dispersal of bromine in the reaction mixture so as to suppress localized bromine accumulation the bromine is, inter-alia, preferably feed to the reaction mixture in the form of a gaseous mixture diluted with an inert gas because such an addition of the bromine results in reaction rate acceleration and minimization of by-product formation (see Col. 4, lines 18-30).

It would have been *prima facie* obvious to one having ordinary skill in the art, in view of the Elnager reference, to produce a benzyl bromide as presently claimed because Elnager teaches that a thermal benzylic bromination process for producing benzyl bromide in which an aromatic ring-containing compound, containing a benzylic

carbon, may be contacted with liquid or gaseous bromine (diluted with an inert gas) at temperatures between 100^0 C to about 170^0 C.

One having ordinary skill in the art, in view of the teachings in the Elnager reference, would have been motivated to produce a benzyl bromide by contacting an aromatic ring-containing compound with gaseous bromine diluted with an inert gas in an effort to minimize by-product formation. One having ordinary skill in the art, desiring to arrive at any and all possible benzyl bromide compounds that may potentially be used in the production of pharmaceutical products, would have also been motivated to use aromatic ring-containing compounds such as toluene, p-bromotoluene, p-fluorotoluene or 4-bromo-2-fluorotoluene. The instantly claimed invention would therefore have been obvious to one having ordinary skill in the art.

Response to Arguments

Applicants' arguments filed 1/23/04 have been fully considered but they are not persuasive.

Applicants argue that Elnagar does not teach a process for producing a benzyl bromide comprising, contacting bromine with a reaction mixture having an organic, liquid phase comprising an aromatic ring-containing compound bearing one benzylic carbon atom at a temperature that is between 100^0 C to about 170^0 C. Rather, Elnagar teaches thermal benzylic halogenation of primary or secondary alkylbenzoic acid esters using, inter-alia, bromine to produce the corresponding benzylically brominated ester. Thus, Elnagar describes a generic class of reactant materials (i.e., primary or

aecondary alkylbenzoic acid esters) and products formed by the process (i.e., benzylically brominated ester).

This argument is not convincing because Elnagar explicitly teaches a benzylic bromination process wherein an aromatic ring-containing compound bearing one benzylic carbon atom (e.g., ethyl 4-methylbenzoate and methyl 4-methylbenzoate) is brominated at the benzylic carbon atom to form the corresponding benzyl bromide products (e.g., ethyl 4-(bromomethyl)benzoate and methyl 4-(bromomethyl)benzoate, respectively) (see Examples 1 and 2).

Applicants further argue that no prior art suggests the desirability of conducting any benzylic reaction to effect benzylic bromination other than carrying out a thermal benzylic halogenation of primary or secondary alkylbenzoic acid esters using, inter-alia, bromine to produce the corresponding benzylically brominated ester. Thus the subject matter of the present claims is beyond the teaching of Elnagar.

This argument is not convincing because Elnagar conducts a benzylic reaction to effect benzylic bromination. Elnagar's reactants materials described in Examples 1 and 2 are clearly aromatic-ring containing compounds bearing a benzylic carbon (the benzylic carbon being the methyl group at the 4-position of the aromatic benzene ring moiety) which are brominated at the said benzylic carbon position.

Applicants argue that the Elnagar reference at best constitutes an "obvious to try" basis for the rejection and therefore a *prima facie* case has not been established.

This argument is not persuasive because it would have been obvious to one having ordinary skill in the art, in view of the Elnager reference, to produce a benzyl

bromide as presently claimed because Elnager teaches that a thermal benzylic bromination process for producing benzyl bromide product in which an aromatic ring-containing compound, containing a benzylic carbon, may be contacted with liquid or gaseous bromine (diluted with an inert gas) at temperatures between 100^0 C to about 170^0 C, to effect bromination of the said benzylic carbon atom. One having ordinary skill in the art, in view of the teachings in the Elnager reference, would have been motivated to produce a benzyl bromide product by contacting an aromatic ring-containing compound with gaseous bromine diluted with an inert gas in an effort to minimize by-product formation. One having ordinary skill in the art, desiring to arrive at any and all possible benzyl bromide compounds that may potentially be used in the production of pharmaceutical products, would have also been motivated to use aromatic ring-containing compounds such as toluene, p-bromotoluene, p-fluorotoluene or 4-bromo-2-fluorotoluene. Thus, the presently claimed invention would have bee *prima facie* obvious to one having ordinary skill in the art.

For the record, the Examiner notes that applicants have noted that the statement in the previous action on page 5, which refers to the Elnagar reference generally teaching that certain substituents on the aromatic ring-containing compounds are not susceptible to halogention, is not relevant to the presently claimed invention. The Examiner agrees that the said statement is not relevant and has removed the statement.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elvis O. Price whose telephone number is 571 272-0644. The examiner can normally be reached on 8:30 am to 5:00 pm; Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Johann R. Richter can be reached on 571 272-0646. The fax phone numbers for the organization where this application or proceeding is assigned is 703 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 308-1235.

Elvis O. Price

April 18, 2004